



Garage Sites,
Wick, Littlehampton

Desk Study and Extended Phase 1 Habitat Survey

For

Arun District Council

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FIGURE 1 SITE LOCATION, STUDY AREA AND DESK STUDY RESULTS

FIGURES 2A - 2E EXTENDED PHASE 1 HABITAT SURVEY MAP

FIGURES 3A - 3E PHOTOGRAPHS OF THE SITE

1. Summary and Main Recommendations

1.1 Summary

1.1.1 Arun District Council is proposing a residential development comprising 23 units across five garage sites. Planning permission for the development is currently being sought by Arun District Council. The site lies within an area identified in Arun District Council's local plans as the 'built-up area boundary'.

1.1.2 The brief was to undertake a preliminary ecological assessment of the site and discuss the legal and planning policy issues associated with the proposed development and biodiversity. To that end, a desk study and extended Phase 1 habitat survey were undertaken to gather baseline ecological data for the site.

1.1.3 The main findings of the desk study were that West Beach Local Nature Reserve (LNR) and Littlehampton Golf Course and Atherington Beach Site of Nature Conservation Importance (SNCI) are located outside of the proposed development boundaries but within 2km of the development sites. West Beach LNR is protected by national legislation and both designated sites receive protection under local planning policy. One hundred and eight parcels of habitat listed as habitats of principal importance under Section 41 of the Natural Environment and Rural Communities Act 2006 were also identified within 2km of the proposed development. In addition, the desk study provided records of species of conservation concern within a 1km radius, including reptiles.

1.1.4 During the field survey the sites were found to support dense scrub, scattered scrub, scattered broadleaved trees, poor semi-improved grassland, improved grassland, amenity grassland, introduced shrub, intact species-poor hedge, fence, hard standing and hard standing / ephemeral / short perennial mosaic. In addition, mole hills were recorded. Mole is protected from unnecessary suffering under the Wild Mammals (Protection) Act 1996.

1.1.5 The development should not have a significant negative effect on West Beach LNR, Littlehampton Golf Course and Atherington Beach SNCI or the 108 parcels of habitat of principal importance as they are separated by a minimum of 1.4km and the development should not cause a significant increase in recreational pressure. Habitat supporting mole is present on the sites. The mitigation proposals set out in this report should ensure that the development is compliant with the law and planning policy with respect to mole.

1.1.6 There is also habitat on the sites suitable for common toad, reptiles, breeding birds and hedgehog. Further survey for these species is not considered necessary although measures should be undertaken prior to, and during, site clearance to ensure the development is compliant with legislation and planning policy with regard to these species.

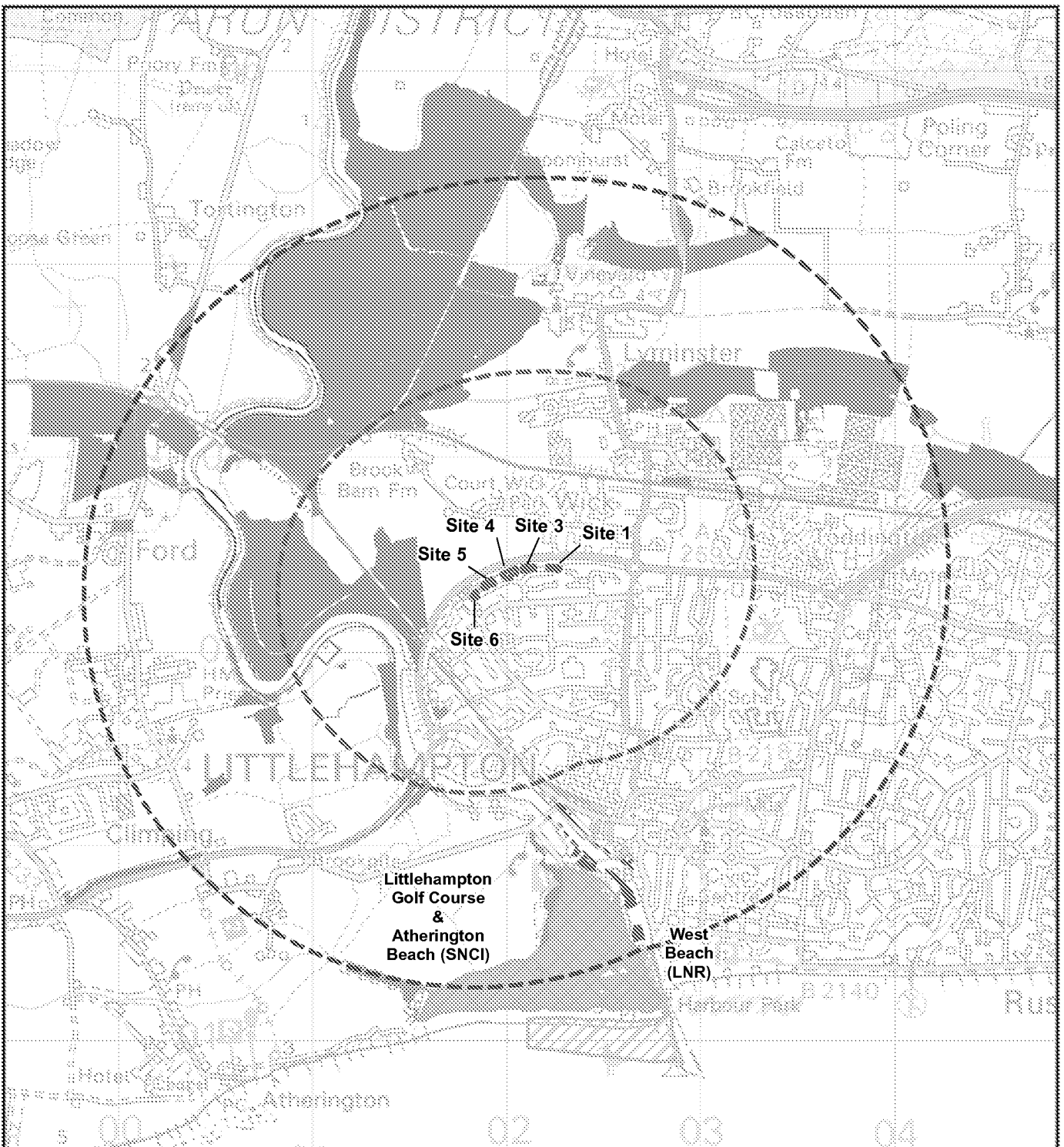
1.2 Main Recommendations

1.2.1 The following measures are recommended for the development to comply with relevant biodiversity legislation and policy:

- ✧ Protection of all trees on site during and after development in accordance with British Standard 5837:2012;

- ✧ Necessary clearance of trees and shrubs undertaken outside the bird breeding season, *i.e.* clearance should take place between September and February inclusive;
- ✧ Site clearance should be carried out in a precautionary manner to ensure that no offence is committed in relation to common toad, mole or hedgehog through crushing and asphyxiation;
- ✧ Appropriate mowing of grassland, between April and September inclusive, in the presence of an ecologist, prior to site clearance to encourage any reptiles present to move into adjacent habitat;
- ✧ Ecological watching brief to minimise the risk of killing or injury, if any reptiles are present, during site clearance between April and September inclusive;
- ✧ Planting of native insect-attracting species to provide food for bats, birds and invertebrates;
- ✧ Provision of dead wood piles in boundary areas to provide habitat for invertebrates, reptiles and amphibians; and
- ✧ Use of bat-sensitive street lighting.

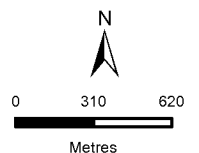
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Legend

-  Site of Nature Conservation Importance (SNCI)
-  Local Nature Reserve (LNR)
-  1km Study Area
-  2km Study Area
-  Site Boundary

-  Coastal and Floodplain Grazing Marsh
-  Coastal Vegetated Shingle
-  Deciduous Woodland
-  Good Quality Semi-Improved Grassland
-  Lowland Fens
-  Mudflats



Client Arun District Council		Drawing Ref LMIL122/14466/1		 www.thomsonecology.com enquiries@thomsonecology.com
Figure Number 1		Scale at A4 1:30,000		
Figure Title Site Location, Study Area & Desk Study Results		Drawn AC	Checked NS	
		Date 30/01/2014	Date 30/01/2014	

Legend

- ➔ Photograph Location and Direction
- ⊙ Target Note
- +++ Fence
- Poor Semi-Improved Grassland (SI)
- ▨ Amenity Grassland (A)
- ▤ Hard Standing
- ▭ Site Boundary

Site Grid Reference: 502,244 103,432

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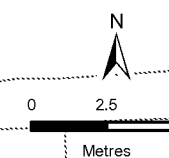
Scale at A3
1:250

Drawn AC	Checked NS
Date 30/01/2014	Date 30/01/2014

Client
Arun District Council

Figure Number
2a

Figure Title
Extended Phase 1
Habitat Survey Map
Site 1



SI1

TN1

➔
P2

HS/ESP1

AM1

HS2

SI1

TN2

P1

HS1

AM1

HS1

Joyce Close

Legend

- ➔ Photograph Location and Direction
- ◆ Scattered Broadleaved Trees (SBW)
- Species-poor Hedge
- +++ Fence
- Poor Semi-Improved Grassland (S/I)
- ▨ Amenity Grassland (A)
- ▩ Hard Standing
- ▭ Site Boundary

Site Grid Reference: 502,113 103,429

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Date 30/01/2014	Date 30/01/2014

Client
Arun District Council

Figure Number
2b

Figure Title
Extended Phase 1
Habitat Survey Map
Site 3

Legend

- ➔ Photograph Location and Direction
- Scattered Broadleaved Trees (SBW)
- +++ Fence
- Poor Semi-Improved Grassland (SI/)
- Amenity Grassland (A)
- ▨ Introduced Shrub
- ▨ Hard Standing
- ▨ Not Surveyed
- Site Boundary

Site Grid Reference: 502,012 103,403

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Date 30/01/2014	Date 30/01/2014
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Client
Arun District Council

Figure Number
2c

Figure Title
Extended Phase 1
Habitat Survey Map
Site 4

Legend

- ➔ Photograph Location and Direction
- ◆ Scattered Broadleaved Trees (SBW)
- ✕ Scattered Scrub (SS)
- ⊙ Target Note
- +++ Fence
- ▨ Dense Scrub
- Poor Semi-Improved Grassland (SI/)
- ▤ Amenity Grassland (A)
- ▧ Hard Standing
- ▭ Site Boundary

Site Grid Reference: 501,905 103,354

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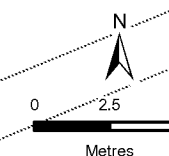
Scale at A3
1:250

Drawn AC	Checked NS
Date 30/01/2014	Date 30/01/2014

Client
Arun District Council

Figure Number
2d

Figure Title
Extended Phase 1
Habitat Survey Map
Site 5



Greenfields

HS/ESP4

HS5

SI4

AM4

DS1

AM4

AM4

HS5

P8

P10

P7

TN3

P9

Legend

- ➔ Photograph Location and Direction
- ⬤ Scattered Broadleaved Trees (SBW)
- Species-poor Hedge
- +++ Fence
- Improved Grassland (I)
- ▨ Amenity Grassland (A)
- ▤ Hard Standing
- ▭ Site Boundary

Site Grid Reference: 501,837 103,294

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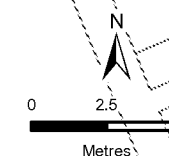
Scale at A3
1:250

Drawn AC	Checked NS
Date 30/01/2014	Date 30/01/2014

Client
Arun District Council

Figure Number
2e

Figure Title
Extended Phase 1
Habitat Survey Map
Site 6





Photograph 1:
Looking west across site showing areas of poor semi-improved grassland (SI1), amenity grassland (AM1), fence, hard standing (HS1) and hard standing / ephemeral / short perennial (HS/ESP1).



Photograph 2:
Dumped household rubbish (TN1) within poor semi-improved grassland (SI1).

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Figure Number	3a	Scale at A4	Not applicable			
Figure Title	Photographs of the Site Site 1	Drawn	AC		Checked	NS
		Date	30/01/2014		Date	30/01/2014



Photograph 3:
Looking west across site, showing areas of poor semi-improved grassland (SI2), intact species poor hedge (PH1) and hard standing / ephemeral / short perennial (HS/ESP2).



Photograph 4:
Areas of amenity grassland (AM2) in the east of the site.

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Figure Number	3b	Scale at A4	Not applicable			
Figure Title	Photographs of the Site Site 3	Drawn	AC		Checked	NS
		Date	30/01/2014		Date	30/01/2014



Photograph 5:
Looking west across site showing areas of amenity grassland (AM3) and fence.



Photograph 6:
Looking north west across site showing areas of poor semi-improved grassland (SI3) and hard standing / ephemeral / short perennial (HS/ESP3).

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Figure Number	3c	Scale at A4	Not applicable			
Figure Title	Photographs of the Site Site 4	Drawn	AC		Checked	NS
		Date	30/01/2014		Date	30/01/2014



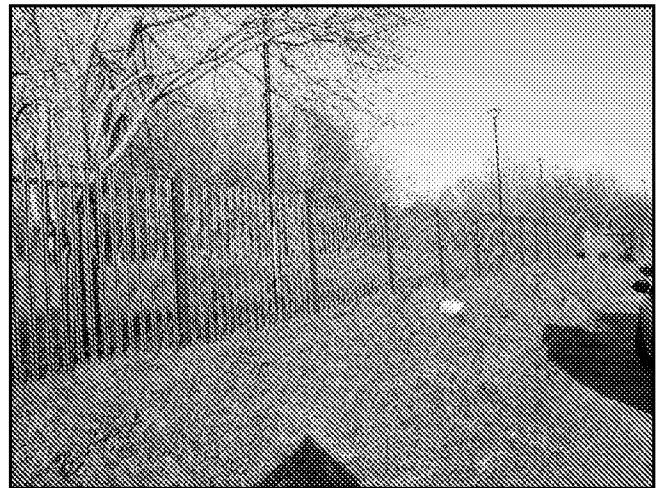
Photograph 7:
Hard standing / ephemeral / short perennial
(HS/ESP4) habitat and fence on site.



Photograph 8:
Areas of dense scrub (DS1), scattered scrub, poor
semi-improved grassland (SI4) and amenity grassland
(AM4).



Photograph 9:
Ivy dominated vegetation and wooden board (TN3)
within poor semi-improved grassland (SI4).



Photograph 10:
Scattered broadleaved trees, poor semi-improved
grassland (SI4) and fence habitats in the north of the
site.

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Figure Number	3d	Scale at A4	Not applicable		
Figure Title	Photographs of the Site Site 5	Drawn	AC	Checked NS	
		Date	30/01/2014	Date	



Photograph 11:
Areas of improved grassland (I1), amenity grassland (AM5), intact species-poor hedges (PH2 and PH3) and fence habitats on site.



Photograph 12:
Looking south across site showing areas of amenity grassland (AM5) and hard standing / ephemeral / short perennial (HS/ESP5).

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Figure Number	3e	Scale at A4	Not applicable			
Figure Title	Photographs of the Site Site 6	Drawn	AC		Checked	NS
		Date	30/01/2014		Date	30/01/2014

2. Introduction

2.1 Development Background

2.1.1 Arun District Council is proposing a residential development comprising 23 units across five garage sites. Current proposals include 19 houses and four flats with associated private gardens and soft landscaping. Access roads and car parking spaces for new and existing residents are also proposed. The proposals described above are hereafter referred to collectively as 'the development'.

2.1.2 The development will be located on five existing garage sites (totalling approximately 7.6ha) located adjacent to each other within an existing residential estate:

- ✧ Site 1, Joyce Close (Grid Reference TQ022034);
- ✧ Site 3, Joyce Close (Grid Reference TQ021034);
- ✧ Site 4, Greenfields (Grid Reference TQ020034);
- ✧ Site 5, Greenfields (Grid Reference TQ019033); and
- ✧ Site 6, Greenfields (Grid Reference TQ018032).

2.1.3 The five sites lie immediately south of the A259 in Wick, Littlehampton, as shown on Figure 1. The areas affected by the development are hereafter referred to as 'the sites'.

2.1.4 Planning permission for the development is currently being sought by Arun District Council. The sites lie within an area identified in Arun District Council's local plan as 'built-up area boundary' to which Policy GEN2 applies. Policy GEN2 states that "*development or redevelopment will be permitted within the built-up area boundaries, subject to the other policies in this plan*".

2.2 The Brief and Objectives

2.2.1 Arun District Council commissioned Thomson Ecology on 23rd January 2014, to undertake a preliminary ecological assessment of the development sites. The brief was to:

- ✧ Purchase and collation of records of designated sites within 2km of the sites and records of protected species and species of conservation concern within 1km of the sites to identify any ecological constraints to the development;
- ✧ Site visit, by a suitably experienced ecologist, to carry out an extended Phase 1 habitat survey of the site to record the main habitats and plant species present on the site and to assess the suitability of the site to support protected species and species of conservation concern; and
- ✧ Production of a comprehensive report, with digital mapping, which will outline the methodology and results of the desk study and the extended Phase 1 habitat survey and discuss any relevant potential legal and planning policy issues noted with recommendations as to how these may be overcome, including further surveys or mitigation, if required. Suggestions for biodiversity enhancements will be included, if appropriate.

2.3 Limitations

2.3.1 The species data collated during the desk study is mainly derived from records submitted by members of the public and *ad hoc* surveys undertaken by volunteers. Therefore, it should not be taken as a definitive list of the protected species and other species of conservation concern that occur in the local area.

2.3.2 Phase 1 habitat surveys can be undertaken at any time of year, however, the optimum time for undertaking this survey would be between April and September. This is not considered to have had a significant impact on the survey as plant species and habitat types were easily identifiable and an assessment of the site to support protected species could still be made.

3. Methodology

3.1 Desk Study

3.1.1 A study area was defined that encompasses the sites and all land within 2km of the perimeter of the sites, see Figure 1. Sussex Biodiversity Records Centre was approached and asked to provide up-to-date information on sites designated for their nature conservation value, local nature reserves, records of protected species and other species of conservation concern and any other information that they considered relevant. Records of designated sites were sought for the full study area, whereas records for species were sought for part of the study area encompassing the sites and within 1km of the perimeter of the sites.

3.1.2 Records were requested from Sussex Biodiversity Records Centre on 23rd January 2014.

3.1.3 In addition, published data was consulted, including the following:

- ✦ The Multi-Agency Geographical Information for the Countryside (MAGIC);
- ✦ Arun District Council Local Plan (2003);

3.2 Field Survey

3.2.1 A survey area was defined that encompassed the sites. The survey areas are shown on Figures 2a to 2e

3.2.2 An extended Phase 1 habitat survey (JNCC, 2010; IEA, 1995) was conducted throughout the survey area. Phase 1 habitat survey is a standard technique for rapidly obtaining baseline ecological information over a large area of land. It is primarily a mapping technique and uses a standard set of habitat definitions for classifying areas of land on the basis of the vegetation present. For this survey, the technique was modified (or extended) to provide more detail over a smaller area, and give further consideration to fauna. The standard habitat definitions were used.

3.2.3 The dominant and readily identified species of higher plant species from each habitat type within the survey area were recorded and their abundance was assessed on the DAFOR scale:

- D Dominant
- A Abundant
- F Frequent
- O Occasional
- R Rare

3.2.4 These scores represent the abundance within the defined area only and do not reflect national or regional abundances. In addition, E was used to indicate species that were located at the edge of a habitat and C was used to denote species that were found clumped together, rather than spread throughout the habitat. Plant species nomenclature follows Stace (2010).

3.2.5 Incidental records of fauna were also made during the survey and the habitats identified were evaluated for their potential to support protected species and other species of conservation

concern, including species of principal importance. However, no specific faunal surveys were undertaken.

3.2.6 The survey was conducted on 27th January 2014.

4. Results

4.1 Background

- 4.1.1 The contents of the results section are the factual results of the desk study and extended Phase 1 habitat survey. Excluded from this section is the assessment of the sites to support species of conservation concern not recorded during the survey. Instead, potential further ecological issues are discussed in Section 6.

4.2 Desk Study

- 4.2.1 Responses were received from Sussex Biodiversity Records Centre on 28th January 2014. The results of the desk study are summarised below and the locations of designated sites are shown on Figure 1.

Designated Sites

- 4.2.2 One Local Nature Reserve (LNR) and one Site of Nature Conservation Interest (SNCI) within 2km of the development sites' perimeters were identified by the desk study, details of which are given in Table 1 and on Figure 1.

Table 1: Statutory and non-statutory designated sites within 2km of the sites

Site Designation	Grid Reference	Area (ha)	Distance to site (km)	Description
County and Local Sites				
West Beach LNR	TQ025010	15.7	1.9	Sand flat, tide line, shingle and sand dune habitats. The site supports the rare sand catchfly (<i>Silene conica</i>) and is important for reptiles, invertebrates, molluscs and wading birds.
Littlehampton Golf Course and Atherington Beach SNCI	TQ022013	45.8	1.4	Remnant patches of species-rich calcareous grassland supporting County rarities such as bulbous meadow-grass (<i>Poa bulbosa</i>) and suffocated clover (<i>Trifolium suffocatum</i>). Areas of dry dune

Site Designation	Grid Reference	Area (ha)	Distance to site (km)	Description
				grassland and vegetated shingle beach support several uncommon plants including yellow-horned poppy (<i>Glaucium flavum</i>).

Habitats of Principal Importance

4.2.3 No habitats of principal importance, as listed under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006, were recorded within the sites during the field survey. Six habitats of principal importance lying within 2km of the development sites were identified during the desk study, see Table 2.

Table 2: Habitats of principal importance within 2km of the development sites

Habitat type	Grid reference*	Distance to site (km)*	Description
Coastal and floodplain grazing marsh	TQ014033	0.3	Sixty-one parcels within 2km.
Coastal vegetated shingle	TQ027013	1.9	One parcel within 2km
Intertidal mudflat	TQ022022	1.1	Twenty-three parcels within 2km.
Lowland fens	TQ021013	1.9	One parcel within 2km
Deciduous woodland	TQ016027	0.4	Sixteen parcels within 2km.
Good quality semi-improved grassland	TQ022015	1.5	Six parcels within 2km.

* Details of closest parcel

Ancient Woodland

- 4.2.4 No ancient woodlands greater than 2ha in area and listed on the ancient woodland register occur within the sites or were identified within 2km of the sites' perimeters during the desk study.

Protected Species and Other Species of Conservation Concern

- 4.2.5 The desk study provided records for a number of protected species and species of conservation concern within 1km of the sites. The results are summarised in Table 3, where records from the last ten years and closest to the sites are detailed.

Table 3: Records of protected species and other species of conservation concern within 1km of the sites derived from the desk study.

Common Name	Scientific Name	HR Sch 2 or 4	WCA Sch1, 5 or 8	NERC Act	Local BAP species	Red Data Book	Other	Grid Ref.*	Distance from site
Plants									
Cornflower	<i>Centaurea cyanus</i>			✓	✓		SRSI	TQ020210 2068	1.0km
Corn buttercup	<i>Ranunculus arvensis</i>			✓	✓	CE	SRSI	TQ014590 2432	0.9km
Grape-hyacinth	<i>Muscari neglectum</i>			✓	✓	VU		TQ004023	1.0km
Wild candytuft	<i>Iberis amara</i>			✓	✓	VU	SRSI	TQ020210 2068	1.0km
Invertebrates									
Beaded chestnut	<i>Agrochola lychnidis</i>			✓	✓			TQ025045	1.0km
Buff ermine	<i>Spilosoma luteum</i>			✓	✓			TQ025045	1.0km
Cinnabar	<i>Tyria jacobaeae</i>			✓	✓			TQ025045	1.0km
Dark-barred twin-spot carpet	<i>Xanthorhoe ferrugata</i>			✓	✓			TQ025045	1.0km
Dot moth	<i>Melanchra persicariae</i>			✓	✓			TQ025045	1.0km

Common Name	Scientific Name	HR Sch 2 or 4	WCA Sch1, 5 or 8	NERC Act	Local BAP species	Red Data Book	Other	Grid Ref.*	Distance from site
Dusky brocade	<i>Apamea remissa</i>			✓	✓			TQ025045	1.0km
Knot grass	<i>Acronicta rumicis</i>			✓	✓			TQ025045	1.0km
Mottled rustic	<i>Caradrina morpheus</i>			✓	✓			TQ025045	1.0km
Rosy rustic	<i>Hydraecia micacea</i>			✓	✓			TQ025045	1.0km
Rustic	<i>Hoplodrina blanda</i>			✓	✓			TQ020034	0km
Shoulder-striped wainscot	<i>Mythimna comma</i>			✓	✓			TQ0303	<1km
Small emerald	<i>Hemistola chrysoprasaria</i>			✓	✓			TQ025045	1.0km
Small heath	<i>Coenonympha pamphilus</i>			✓	✓	NT		TQ0303	<1km
Small square-spot	<i>Diarsia rubi</i>			✓	✓			TQ0303	<1km
White ermine	<i>Spilosoma lubricipeda</i>			✓	✓			TQ025045	1.0km
White-letter hairstreak	<i>Satyrrium w-album</i>		✓	✓	✓	EN		TQ014026	0.7km
Reptiles and Amphibians									
Common lizard	<i>Zootoca vivipara</i>		✓	✓	✓			-	<1km

Common Name	Scientific Name	HR Sch 2 or 4	WCA Sch1, 5 or 8	NERC Act	Local BAP species	Red Data Book	Other	Grid Ref.*	Distance from site
Common toad	<i>Bufo bufo</i>		✓	✓	✓			TQ030035	0.7km
Slow worm	<i>Anguis fragilis</i>		✓	✓	✓			-	<1km
Birds									
Barn owl	<i>Tyto alba</i>		✓				Amber	TQ017036	0.3km
Black redstart	<i>Phoenicurus ochruros</i>		✓				Amber	-	<1km
Bullfinch	<i>Pyrrhula pyrrhula</i>			✓			Amber	-	<1km
Cetti's warbler	<i>Cettia cetti</i>		✓					TQ013026	0.8km
Corn bunting	<i>Emberiza calandra</i>			✓			Red	TQ035039	1.0km
Cuckoo	<i>Cuculus canorus</i>			✓			Red	-	<1km
Dunnock	<i>Prunella modularis</i>			✓			Amber	-	<1km
Eurasian curlew	<i>Numenius arquata</i>			✓			Amber	TQ014028	0.6km
Fieldfare	<i>Turdus pilaris</i>		✓				Red	-	<1km
Firecrest	<i>Regulus ignicapilla</i>		✓				Amber	TQ0002	<1km
Garganey	<i>Anas querquedula</i>		✓				Amber	-	<1km

Common Name	Scientific Name	HR Sch 2 or 4	WCA Sch1, 5 or 8	NERC Act	Local BAP species	Red Data Book	Other	Grid Ref.*	Distance from site
Green sandpiper	<i>Actitis hypoleucos</i>		✓				Amber	-	<1km
Grey partridge	<i>Perdix perdix</i>			✓			Red	-	<1km
Herring gull	<i>Larus argentatus</i>			✓			Red	-	<1km
Hobby	<i>Falco subbuteo</i>		✓					TQ003025	1.0km
Hoopoe	<i>Upupa epops</i>		✓					-	<1km
House sparrow	<i>Passer domesticus</i>			✓			Red	-	<1km
Kingfisher	<i>Alcedo atthis</i>		✓				Amber	TQ0003	<1km
Lapwing	<i>Vanellus vanellus</i>			✓			Red	TQ012034	0.6km
Linnet	<i>Carduelis cannabina</i>			✓			Red	-	<1km
Little ringed plover	<i>Charadrius dubius</i>		✓					TQ0302	<1km
Marsh tit	<i>Poecile palustris</i>			✓			Red	-	<1km
Osprey	<i>Pandion haliaetus</i>		✓				Amber	-	<1km
Peregrine falcon	<i>Falco peregrinus</i>		✓					TQ018030	0.2km
Redwing	<i>Turdus iliacus</i>		✓				Red	-	<1km

Common Name	Scientific Name	HR Sch 2 or 4	WCA Sch1, 5 or 8	NERC Act	Local BAP species	Red Data Book	Other	Grid Ref.*	Distance from site
Red kite	<i>Milvus milvus</i>		✓				Amber	TQ0002	<1km
Reed bunting	<i>Emberiza schoeniclus</i>			✓			Amber	-	<1km
Ring ouzel	<i>Turdus torquatus</i>			✓			Red	-	<1km
Skylark	<i>Alauda arvensis</i>			✓			Red	-	<1km
Slavonian grebe	<i>Podiceps auritus</i>		✓				Amber	-	<1km
Snipe	<i>Gallinago gallinago</i>						Amber	TQ0003	<1km
Snow bunting	<i>Plectrophenax nivalis</i>		✓				Amber	-	<1km
Song thrush	<i>Turdus philomelos</i>			✓			Red	-	<1km
Spotted flycatcher	<i>Muscicapa striata</i>			✓			Red	-	<1km
Velvet scoter	<i>Melanitta fusca</i>		✓				Amber	-	<1km
Whimbrel	<i>Numenius phaeopus</i>		✓				Red	-	<1km
Wood lark	<i>Lullula arborea</i>		✓	✓			Amber	-	<1km
Yellow hammer	<i>Emberiza citrinella</i>			✓			Red	-	<1km

Common Name	Scientific Name	HR Sch 2 or 4	WCA Sch1, 5 or 8	NERC Act	Local BAP species	Red Data Book	Other	Grid Ref.*	Distance from site
Bats									
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	✓	✓					TQ032030	1.0km
Myotis species	<i>Myotis</i> sp	✓	✓					TQ039033	1.0km
Pipistrelle species	<i>Pipistrellus</i> sp	✓	✓					TQ027033	0.5km
Serotine	<i>Eptesicus serotinus</i>	✓	✓					TQ032030	1.0km
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	✓	✓		✓			TQ039033	1.0km
Other mammals									
Water vole	<i>Arvicola amphibius</i>		✓	✓	✓			TQ002110 3880	1.0km
West European hedgehog	<i>Erinaceus europaeus</i>			✓	✓			TQ016026	0.7km

* = Grid references were not given for all species. Where several grid references have been provided, the closest one has been given.

HR = Conservation (Habitats &c) Regulations 2010.

WCA = Wildlife and Countryside Act 1981, as amended.

BAP = UK Biodiversity Action Plan.

Red Data Book = Critically Endangered (CE), Endangered (EN), Near Threatened (NT), Vulnerable (VU).

Other = RSPB red and amber listed species and plant species listed on the Sussex Rare Species Inventory (SRSI).

4.3 Field Survey - Site 1

Habitats and Flora

4.3.1 The following Phase 1 habitat types were identified on site 1:

- ✧ Poor semi-improved grassland;
- ✧ Amenity grassland;
- ✧ Fence;
- ✧ Hard standing; and
- ✧ Hard standing / ephemeral / short perennial mosaic.

4.3.2 These habitats are described below and their distribution is given on Figure 2a.

Poor semi-improved grassland

4.3.3 A wide strip (approximately 181.1m²) of poor semi-improved grassland runs along the northern boundary of Site 1 (SI1 on Figure 2a, Photograph 1 on Figure 3a). Cock's foot (*Dactylis glomerata*) is abundant with frequent perennial rye-grass (*Lolium perenne*), wall barley (*Hordeum murinum*) and common field-speedwell (*Veronica persica*) present. Creeping buttercup (*Ranunculus repens*) is found occasionally and red fescue (*Festuca rubra*) and doves-foot cranes-bill (*Geranium molle*) are also present rarely.

4.3.4 Dumped household rubbish is located at the north-western end of the habitat (TN1 on Figure 2a).

Amenity grassland

4.3.5 Two small areas (totalling approximately 40.3m²) of amenity grassland are located in the east of the site (AM1 on Figure 2a, Photograph 1 on Figure 3a) dominated by perennial rye-grass. Dandelion (*Taraxacum officinale* agg.) and daisy (*Bellis perennis*) are also frequent.

Fence

4.3.6 A metal fence runs through the poor semi-improved grassland in the north of the site and lengths of wooden garden fencing form part of the site boundary in the east, south and west (see Photograph 1 on Figure 3a).

Hard standing

4.3.7 Concrete paving (totalling approximately 185.6m²) borders the site boundary in the east, south and west of the site (HS1 on Figure 2a, Photograph 1 on Figure 3a) and a tarmac path cuts through poor semi-improved grassland in the north-eastern corner (HS2 on Figure 2a).

Hard standing / Ephemeral / short perennial mosaic

- 4.3.8 A large (approximately 928.8m²) concrete and tarmac parking area occupies much of the site (HS/ESP1 on Figure 2a, Photograph 1 on Figure 3a). Ephemeral / short perennial vegetation covers approximately 0.5% of the area, comprising occasional annual meadow grass (*Poa annua*) with common field-speedwell and hairy bitter-cress (*Cardamine hirsuta*) found rarely at the edges.
- 4.3.9 Dumped household rubbish is located at the north-eastern end of the habitat (TN2 on Figure 2a, Photograph 2 on Figure 3a).

Fauna

- 4.3.10 No fauna was observed using the site during the field survey.

4.4 Field Survey - Site 3

Habitats and Flora

- 4.4.1 The following Phase 1 habitat types were identified on site 3:

- ✧ Scattered broadleaved trees;
- ✧ Poor semi-improved grassland;
- ✧ Amenity grassland;
- ✧ Intact species-poor hedge;
- ✧ Fence;
- ✧ Hard standing; and
- ✧ Hard standing / Ephemeral / short perennial mosaic.

- 4.4.2 These habitats are described below and their distribution is given on Figure 2b.

Scattered broadleaved trees

- 4.4.3 Two mature whitebeam (*Sorbus aria* agg.) trees are located in the north of the site within poor semi-improved grassland.

Poor semi-improved grassland

- 4.4.4 A wide strip (approximately 224.9m²) of poor semi-improved grassland runs along the northern boundary of the site (SI2 on Figure 2b, Photograph 3 on Figure 3b). Common couch (*Elytrigia repens*) and common chickweed (*Stellaria media*) are abundant with cock's foot and spotted medick (*Medicago arabica*) also found frequently. Dove's foot cranes-bill and annual meadow grass are occasionally present with shepherd's-purse (*Capsella bursa-pastoris*) and red dead nettle (*Lamium purpureum*) occurring rarely.

Amenity grassland

- 4.4.5 Three small areas (totalling approximately 103.7m²) of amenity grassland are located in the east and south of the site (AM2 on Figure 2b, Photograph 4 on Figure 3b). Perennial rye-grass is dominant, dandelion is frequent, common bent (*Agrostis capillaris*) is occasional and daisy is rare.

Intact species-poor hedge

- 4.4.6 There is a short length of intact species-poor hedgerow dominated by Leyland Cypress (*X Cuprocyparis leylandii*) in the west of the site where it forms a boundary with an adjacent garden (PH1 on Figure 2b, Photograph 3 on Figure 3b).

Fence

- 4.4.7 A metal fence runs through the poor semi-improved grassland in the north of the site and lengths of wooden garden fencing form part of the site boundary in the east and south.

Hard standing

- 4.4.8 Concrete pavement areas (totalling approximately 195.3 m²) border the site boundary in the east, south and west of the site (HS3 on Figure 2b).

Hard standing / Ephemeral / short perennial mosaic

- 4.4.9 Much of the site is comprised of a large (approximately 1024.0m²) concrete and tarmac parking area (HS/ESP2 on Figure 2b, Photograph 3 on Figure 3b) where the ephemeral / short perennial vegetation covers approximately 1%. Common chickweed is found frequently at the edges along with occasional dandelion and rarely occurring annual meadow grass.

Fauna

- 4.4.10 No fauna was observed using the site during the field survey. Several gulls (*Larus* sp.) were observed flying over the site.

4.5 Field Survey - Site 4

Habitats and Flora

- 4.5.1 The following Phase 1 habitat types were identified on site 4:

- ✧ Scattered broadleaved trees;
- ✧ Poor semi-improved grassland;
- ✧ Amenity grassland;
- ✧ Introduced shrub;
- ✧ Fence;

- ✧ Hard standing; and
- ✧ Hard standing / ephemeral / short perennial mosaic.

4.5.2 These habitats are described below and their distribution is given on Figure 2c.

Scattered broadleaved trees

4.5.3 Two mature wild cherry (*Prunus avium*) trees are located within poor semi-improved grassland in the north-western corner of the site.

Poor semi-improved grassland

4.5.4 There is a strip (approximately 389.1m²) running along the northern boundary of the site (SI3 on Figure 2c, Photograph 6 on Figure 3c) comprising abundant cock's foot and common couch. Common field-speedwell is frequent with musk stork's-bill (*Erodium moschatum*), smooth sow-thistle (*Sonchus oleraceus*), wall barley and common chickweed also present occasionally.

Amenity grassland

4.5.5 A large area (approximately 856.8m²) of amenity grassland is situated in the east of the site (AM3 on Figure 2c, Photograph 5 on Figure 3c) and is dominated by perennial rye-grass. Yorkshire-fog (*Holcus lanatus*) is frequent and white clover and daisy are also found occasionally.

Introduced shrub

4.5.6 A small area (approximately 6.0m²) of introduced shrub dominated by Wilson's honeysuckle (*Lonicera nitida*) is located adjacent to the boundary at the north-western corner of the site (IS1 on Figure 2c).

Fence

4.5.7 A metal fence runs through the poor semi-improved grassland in the north of the site and lengths of wooden garden fencing form part of the site boundary in the east and south (see Photograph 5 on Figure 3c).

Hard standing

4.5.8 Concrete paving (totalling approximately 161.6m²) is present in the east, south and west of the site (HS4 on Figure 2c).

Hard standing / Ephemeral / short perennial mosaic

4.5.9 There is an area (approximately 959.2m²) of hard standing / ephemeral / short perennial mosaic present across much of the south and west of the site as a concrete and tarmac parking area (HS/ESP3 on Figure 2c, Photograph 6 on Figure 3c). The ephemeral / short perennial vegetation comprises approximately 2% of the habitat and annual meadow grass is found

occasionally with Yorkshire-fog and groundsel (*Senecio vulgaris*) also present rarely at the edges.

Fauna

4.5.10 No fauna was observed using site 4 during the field survey.

4.6 Field Survey - Site 5

Habitats and Flora

4.6.1 The following Phase 1 habitat types were identified on site 5:

- ✧ Dense scrub;
- ✧ Scattered scrub;
- ✧ Scattered broadleaved trees;
- ✧ Poor semi-improved grassland;
- ✧ Amenity grassland;
- ✧ Fence;
- ✧ Hard standing; and
- ✧ Hard standing / ephemeral / short perennial mosaic.

4.6.2 These habitats are described below and their distribution is given on Figure 2d.

Dense scrub

4.6.3 There is an area (approximately 25.7m²) of dense scrub dominated by bramble (*Rubus fruticosus* agg.) located in the north west of the site (DS1 on Figure 2d, Photograph 8 on Figure 3d).

Scattered scrub

4.6.4 Scattered scrub is present along the northern boundary of the site comprising abundant common hawthorn (*Crataegus monogyna*) and frequent dog rose (*Rosa canina* agg.) (see Photograph 8 on Figure 3d).

Scattered broadleaved trees

4.6.5 A wild cherry tree is located within poor semi-improved grassland in the north of the site (see Photograph 10 on Figure 3d).

Poor semi-improved grassland

4.6.6 A large strip (approximately 312.3m²) of poor semi-improved grassland runs along the northern boundary of the site (SI4 on Figure 2d, Photographs 8 and 10 on Figure 3d). Cock's foot and

common couch are abundant with red dead nettle and common field-speedwell also found frequently. Broad-leaved dock (*Rumex obtusifolius*), ribwort plantain (*Plantago lanceolata*) and creeping bent (*Agrostis stolonifera*) occur occasionally and dove's-foot crane's-bill is rarely present.

- 4.6.7 A small patch (approximately 6.0m²) of vegetation dominated by ivy (*Hedera helix*) is found under some scattered scrub in the north west of the site (TN3 on Figure 2d, Photograph 9 on Figure 3d). Bramble is found occasionally with lesser celandine (*Ficaria verna*) also occurring rarely.

Amenity grassland

- 4.6.8 There are three small areas (totalling approximately 105.2m²) of amenity grassland adjacent to dense scrub in the north west of the site (AM4 on Figure 2d, Photograph 8 on Figure 3d). Perennial rye-grass is dominant with spotted medick and white clover (*Trifolium repens*) occurring rarely.

Fence

- 4.6.9 A metal fence runs through the poor semi-improved grassland in the north of the site and lengths of wooden garden fencing form part of the site boundary in the east and south (see Photograph 10 on Figure 3d).

Hard standing

- 4.6.10 Concrete paving (totalling approximately 113.2m²) is present in the east and south of the site (HS5 on Figure 2d).

Hard standing / Ephemeral / short perennial

- 4.6.11 A concrete and tarmac parking area (approximately 954.2m²) covers much of the site and the ephemeral / short perennial vegetation comprises approximately 2% of the habitat (HS/ESP4 on Figure 2d, Photograph 7 on Figure 3d). Annual meadow grass is found occasionally with cock's foot, smooth sow thistle and dandelion also occurring rarely at the edges.

Fauna

- 4.6.12 No fauna was observed using the site during the field survey but a blue tit (*Cyanistes caeruleus*) was heard and a magpie (*Pica pica*) was seen off-site.

4.7 Field Survey - Site 6

Habitats and Flora

- 4.7.1 The following Phase 1 habitat types were identified on site 6:

- ✧ Scattered broadleaved trees;
- ✧ Improved grassland;

- ✧ Amenity grassland;
- ✧ Intact species-poor hedge;
- ✧ Fence;
- ✧ Hard standing; and
- ✧ Hard standing / ephemeral / short perennial mosaic.

4.7.2 These habitats are described below and their distribution is given on Figure 2e.

Scattered broadleaved trees

4.7.3 A mature sycamore (*Acer pseudoplatanus*) and a mature weeping willow (*Salix x sepulcralis*) are present within improved grassland along the northern boundary of the site.

Improved grassland

4.7.4 There is a strip (approximately 126.0m²) of improved grassland running along the northern boundary of the site (I1 on Figure 2e, Photograph 11 on Figure 3e) which is dominated by perennial rye-grass. White clover is frequent, annual meadow grass occasional and wall barley occurs rarely.

Amenity grassland

4.7.5 Three areas (totalling approximately 128.4m²) of amenity grassland are located throughout the site (AM5 on Figure 2e, Photographs 11 and 12 on Figure 3e). Perennial rye-grass dominates with frequent daisy, occasional wall barley and rare clumps of musk stork's-bill also present.

Intact species-poor hedge

4.7.6 Two short lengths of intact species-poor hedgerow are present in the north-eastern corner of the site (PH2 and PH3 on Figure 2e, Photograph 11 on Figure 3e). PH2 is a Leyland Cypress hedge and is adjacent to the site boundary. PH3 is a garden privet (*Ligustrum ovalifolium*) hedge and forms the boundary between the site and an adjoining garden.

Fence

4.7.7 A low wooden fence runs through the poor semi-improved grassland in the north of the site (see Photograph 11 on Figure 3e) and a length of wooden garden fencing forms part of the site boundary in the west.

Hard standing

4.7.8 Concrete pavement areas (totalling approximately 130.9m²) border the site boundary in the east and west of the site (HS6 on Figure 2e).

Hard standing / Ephemeral / short perennial mosaic

- 4.7.9 A large part (approximately 387.4m²) of the site consists of a concrete and tarmac parking area (HS/ESP5 on Figure 2e, Photograph 12 on Figure 3e). Ephemeral / short perennial vegetation covers approximately 1% of the area and perennial rye-grass, smooth sow thistle and wall barley are found occasionally at the edges.

Fauna

- 4.7.10 Hills made by mole (*Talpa europaea*) were present within the area of improved and amenity grassland in the north of the site (I1 and AM5 on Figure 2e).

5. Legislation and Planning Policy Issues

5.1 Background

- 5.1.1 The content of the legislation and planning policy section is the legislation and planning policy issues that we know are relevant based on this desk study and extended Phase 1 habitat survey. The legislation and policy issues that might arise following further surveys are excluded. Potential further ecological issues are discussed in Section 6. A detailed description of the method for this section is given in Appendix 1.

5.2 Designated Sites

- 5.2.1 West Beach LNR and Littlehampton Golf Course and Atherington Beach SNCI are more than 1km, but less than 2km from the sites. West Beach LNR is protected by the National Parks and Access to Countryside Act 1949, which aims to conserve and enhance the natural beauty, wildlife and cultural heritage of such designated sites. Both West Beach LNR and Littlehampton Golf Course and Atherington Beach SNCI are protected through the National Planning Policy Framework (NPPF) 2012 and Policy AREA15 of the Arun District Council local plan. Policy AREA15 states that *“proposals for development in, or likely to have an adverse effect (directly or indirectly) on a Local Nature Reserve, Site of Nature Conservation Importance (including ancient woodlands or wildlife corridors)..... will not be permitted unless it can be demonstrated that reasons for the proposals outweigh the need to safeguard the nature conservation value of the site/feature”*. The development is unlikely to have a significant negative effect on the two sites and their important attributes because:

- ✧ The LNR and SNCI and the proposed development are separated by a minimum of 1.4km of residential development, Bridge Road and Littlehampton railway line;
- ✧ The residential development should not result in significant increase in recreational pressure as the development is small-scale and set within an already-developed area; and
- ✧ Pollution will be controlled during construction works in accordance with Environment Agency Construction Pollution Prevention Guidelines.

- 5.2.2 The development should therefore be compliant with the relevant legislation and planning policy with respect to statutory designated sites.

5.3 Habitats of Principal Importance

- 5.3.1 One hundred and eight parcels of habitats of principal importance were identified within 2km of the development sites. Habitats of principal importance are habitats considered importance for the conservation of biodiversity in England and are listed under Section 41 of the NERC Act. Under the NPPF, the local planning authority should conserve these habitat types.
- 5.3.2 The habitats of principal importance are separated from the sites by a minimum of 300m and, for the same reasons listed in Section 5.2.1, the proposals are unlikely to have a significant negative effect on these habitats. The development should, therefore, be compliant with the NPPF with respect to habitats of principal importance.

5.4 Ancient Woodland

- 5.4.1 No ancient woodland was found to be present on the site or within the 2km desk study search area and therefore the development is consistent with the NPPF and Policy GEN28 of Arun District Council local plan which have policies that seek to protect ancient woodland from development.

5.5 Protected Species

- 5.5.1 Mole hills were observed within areas of improved and amenity grassland in the north of Site 6 (I1 and AM5 on Figure 2e). Moles receive some protection under the Wild Mammals (Protection) Act 1996. This makes it an offence to intentionally cause this species unnecessary suffering by certain methods, including crushing and asphyxiation, which could occur during site clearance.
- 5.5.2 In addition, the ODPM circular 06/2005 states that the presence of a protected species is a material consideration in the planning process.
- 5.5.3 The mitigation measures set out in Section 7 should ensure that the development proposals are compliant with the law with respect to moles. It should be noted however that other protected species may be present as set out in Section 6.

5.6 Sussex Rare Species Inventory

- 5.6.1 Musk stork's-bill is listed on the Sussex rare species inventory and was recorded within semi-improved grassland on Site 4 and within amenity grassland on Site 6 (SI3 on Figure 2c and AM5 on Figure 2e). Musk stork's-bill is an introduced species and receives no legal protection. Recommendations are made in Section 7.1

5.7 Ecological Enhancement

- 5.7.1 Central and local government policy now points towards ecological enhancement on development sites. For example, the NPPF states that "*opportunities to incorporate biodiversity in and around developments should be encouraged*". Recommendations for ecological enhancement are given in Section 7.2.

6. Potential Further Ecological Issues

6.1 Background

- 6.1.1 The potential further ecological issues section sets out our assessment of the potential of the sites to support protected species and other species of conservation concern which were not detected during the extended Phase 1 habitat survey, either because their presence is seasonal or because specialist survey techniques are required. Further survey work or appropriate mitigation is likely to be required before these issues can be addressed. Further information on the methods of assessment is given in Appendix 1.

6.2 Common toad

- 6.2.1 The dense scrub, scattered scrub, introduced shrub, intact species-poor hedgerows and the habitat found at TN3 throughout the sites provide potential habitat for common toad. In addition, the desk study identified recent records of common toad within 1km of the sites. Common toad is protected from sale and trade under Schedule 5 of the Wildlife and Countryside Act (WCA) 1981, as amended, and is a species of principal importance under the NERC Act. Recommendations for further survey are given in Section 7.3.

6.3 Reptiles

- 6.3.1 Areas of semi-improved and improved grassland habitat present throughout the sites, and the wooden board found at TN3 on Figure 2d (see Photograph 9 on Figure 3d), have the potential to support reptiles. Furthermore, there are recent records of common lizard and slow worm within 1km of the development sites. All native species of reptile are fully protected under the WCA, and by the NPPF. In addition, they are also species of principal importance listed under Section 41 of the NERC Act and are Sussex Biodiversity Action Plan priority species. Recommendations for mitigation are given in Section 7.3.

6.4 Breeding birds

- 6.4.1 Suitable breeding habitat for birds is present throughout the sites in the form of scattered broadleaved trees, dense scrub, scattered scrub and introduced scrub. There are recent records of WCA Schedule 1 bird species and species of principal importance within 1km of the development sites. In addition to the protection from killing or taking that all birds, their nests and eggs receive under the WCA, Schedule 1 birds and their young must not be disturbed at the nest. Furthermore, species of principal importance receive additional protection under Section 41 of the NERC Act, which places a duty on all local authorities to have regard for the conservation of these species. Recommendations for mitigation are given in Section 7.3.

6.5 Bats

- 6.5.1 The desk study identified recent records of bat species within 1km of the sites. All species of bat and their roosts are fully protected by the Habitats Regulations 2010, with additional protection against disturbance under the WCA, as amended. As no suitable roosting habitat was recorded

within the sites, the development is therefore compliant with the relevant legislation and planning policy with regard to bats.

6.6 Hedgehog

6.6.1 The areas of poor semi-improved grassland, improved grassland and amenity grassland across all five sites provide potential habitat for hedgehog. In addition, the desk study identified recent records of hedgehog within 1km of the sites. Hedgehog is a species of principal importance, as listed under Section 41 of the NERC Act and receives some protection under the Wild Mammals (Protection) Act 1996. Recommendations for mitigation are given in Section 7.3.

6.7 Summary

6.7.1 The potential further ecological issues for each site are summarised in Table 4 along with the relevant habitat codes relating to Figures 2a to 2e.

Table 4: Potential further ecological issues and the relevant habitat codes.

Site	Figure	Common toad	Reptiles	Birds	Hedgehog
1	2a	-	SI1	-	SI1, AM1
3	2b	PH1	SI2	SBW	SI2, AM2
4	2c	IS1	SI3	SBW	SI3, AM3
5	2d	DS1, SS, TN3	SI4	SBW	SI4, AM4
6	2e	PH2, PH3	15	SBW	I1, AM5

7. Recommendations

7.1 Mitigation

- 7.1.1 The recommendations for mitigation (including avoidance, mitigation and compensation) measures given in this section are based on the findings of the desk study and extended Phase 1 habitat survey. It may include precautionary mitigation measures for some species which could occur on the site but excludes discussion of the mitigation measures that may be required following the results of the further surveys recommended in Section 7.2.

Trees

- 7.1.2 Trees within the sites should ideally be retained and protected. To prevent damage to trees during and after development, all trees should be protected in accordance with British Standard 5837:2012 '*Trees in relation to design, demolition and construction*', and by setting up root protection areas. Any trees lost to development should be replaced with native species in landscaping proposals.

Protected Species

- 7.1.3 To prevent unnecessary suffering to individual moles using the sites, site clearance should be undertaken in a precautionary manner, for example, by using a mini digger to carefully excavate around any recently used mole hills.

Sussex Rare Species Inventory

- 7.1.4 Musk stork's-bill receives no protection under legislation and is an introduced species. However, landscaping plans could incorporate the retention of the grassland areas in which Musk stork's-bill was recorded or the plants could be translocated into areas unaffected by the development.

7.2 Ecological Enhancements

- 7.2.1 As the NPPF now encourages ecological enhancement on development sites, the following suggestions are made to enhance the value of the sites for biodiversity within the landscaping plans:
- ✧ Use of predominately native trees and shrubs of local provenance;
 - ✧ Planting species which attract insects to provide food for bats, birds and invertebrates, e.g. rowan (*Sorbus aucuparia*), honeysuckle (*Lonicera periclymenum*) and evening primrose (*Oenothera* sp.);
 - ✧ Provision of dead wood, from clearance of trees or shrubs, on the sites, to provide habitat for invertebrates, reptiles and amphibians;
 - ✧ Creation of a wildflower rock garden for invertebrates and reptiles, comprising areas of bare ground and ballast, preferably south facing, and planted with native flower species;
 - ✧ Inclusion of suitably-located bird and bat boxes on buildings and trees;

- ✧ Use of bat-sensitive street lighting, such as low level lighting which directs light below the horizontal; and
- ✧ Creation of species-rich grassland areas.

7.3 Further Survey

Common toad

- 7.3.1 Further survey for common toad is not considered necessary. However, care should be taken during site clearance to ensure that no harm comes to common toad, for example, using a tooth bucket to clear vegetation and removal of the wooden board at TN3 by hand. If common toad is encountered during site clearance, they should be moved to an area of nearby suitable habitat that will not be affected by the development.

Reptiles

- 7.3.2 Further survey for reptiles is not considered necessary as the suitable habitat present throughout the sites are small, isolated parcels and there is suitable adjacent habitat immediately north of the sites. However, the sites should be made unsuitable for reptiles prior to any works commencing on the sites.
- 7.3.3 A mitigation method statement should be agreed with the LPA which should include the following measures. A suitably-qualified ecologist should check each site for reptiles and carefully remove any potential refugia immediately prior to the mowing of poor semi-improved and improved grassland. The grass should then be mown to a height of 100mm after which the ecologist should then check the site again and rake the grass to encourage any reptiles to move to the adjacent grassland and open woodland habitat. The grass should then be mown again to a length of 20mm. If the site is not to be cleared immediately after mowing, the grassland should be maintained at a short length (<20mm) by regular mowing.
- 7.3.4 An ecological watching brief should be undertaken during site clearance during which an ecologist will check the site for reptiles immediately prior to clearance of vegetation and a toothed bucket should be used to carefully remove the top soil.
- 7.3.5 The mowing technique and destructive search method described above should be undertaken outside of the reptile hibernation period, *i.e.* works should be carried out between April and September, inclusive, so that reptiles can freely move into suitable adjacent habitat.
- 7.3.6 Following construction, the sites could be enhanced for reptiles and remain linked to the adjacent habitat. In addition, the surrounding habitat could also be enhanced for reptiles, for example, by leaving dead wood in situ following tree and shrub pruning, by creating areas of coarse grasses and by planting species that attract invertebrates.

Breeding birds

- 7.3.7 Further survey for breeding birds is not considered necessary. However, site clearance of any trees and shrubs should be undertaken outside the breeding bird season, *i.e.* site clearance should be undertaken in the period September to February inclusive. If this is not possible, clearance of vegetation should take place under an ecological watching brief in the presence of

an ecologist. This would involve checking vegetation for nests immediately prior to, and during, clearance. If an active nest is found, works will be stopped in that area and an exclusion zone put in place until the nest is no longer active.

Hedgehog

- 7.3.8 Further survey for hedgehog is not considered necessary. However, during site clearance, a precautionary approach should be taken to ensure that the development does not cause unnecessary suffering to hedgehog. If hedgehog is encountered during site clearance, they should be moved to an area of nearby suitable habitat that will not be affected by development.

8. Conclusion

- 8.1.1 One LNR, one SNCI and 108 parcels of habitats of principal importance were found to be present within 2km of the sites. The development is considered unlikely to have a significant negative effect on these sites as they are separated by a minimum of 1.4km and the development should not cause a significant increase in recreational pressure.
- 8.1.2 The site was found to support mole, which is protected from unnecessary suffering under the Wild Mammals (Protection) Act 1996. Recommendations for mitigation are given within this report.
- 8.1.3 The site was found to contain habitat that is suitable for common toad, reptiles, birds and hedgehog. Further survey for these species is not considered necessary. However, certain measures should be undertaken prior to, and during, site clearance in order for the development to be compliant with relevant legislation and planning policy as outlined in this report.
- 8.1.4 Suggestions are given to increase the biodiversity value of the development sites, including planting of native species, provision of dead wood and the use of bat-sensitive street lighting.

9. References

- 9.1.1 Arun District Council (2003). *Arun District Council Local Plan*.
- 9.1.2 Beebee, T.J.C and Griffiths, R.A (2000). *Amphibians and Reptiles*. Harper Collins Publishers. London.
- 9.1.3 British Standard 5837:2012 *Trees in relation to design, demolition and construction*.
- 9.1.4 Environment Agency. (2013) *Construction Pollution Prevention Guidelines*.
- 9.1.5 Gent, A.H and Gibson, S.D eds (1998). *Herpetofauna Workers Manual*. Joint Nature Conservation Committee, Peterborough.
- 9.1.6 Harris, S., Morris, P., Wray, S. and Yalden, D. (1995). *A review of British mammals: population estimates and conservation status of British mammals other than cetaceans*. Joint Nature Conservation Committee, Peterborough.
- 9.1.7 JNCC. (2010). *Handbook for Phase 1 habitat survey: A technique for environmental audit*. Joint Nature Conservancy Committee, Peterborough.
- 9.1.8 Stace, C (2010). *New Flora of the British Isles (third edition)*. Cambridge University Press, Cambridge.

10. Appendix 1

10.1 Identification of Legal and Planning Policy Issues in England

Scope of Assessment

- 10.1.1 The first step is to identify any biodiversity features found on the site that are subject to legal or policy controls, as follows:

Designated Sites

- 10.1.2 The location of the site is compared to the distribution of sites with a statutory or non-statutory nature conservation designation using information derived from the desk study. Consideration is given to designated sites that could be affected directly or indirectly by the proposed development.

Habitats outside Designated Sites

- 10.1.3 The habitats known to occur on the site are compared to those which receive some protection, in law or policy, outside of designated sites i.e. hedgerows, uncultivated land and semi-natural areas, habitats listed as Habitats of Principal Importance for the Conservation of Biodiversity by the Secretary of State and habitats listed as requiring action in the Local Biodiversity Action Plan.

Ancient Woodland

- 10.1.4 The ancient woodland inventory is checked to determine whether any known ancient woodland occurs either on the site or nearby.

Protected Species

- 10.1.5 The species known to occur on the site as a result of the desk study and Phase 1 habitat survey are compared with those listed in nature conservation legislation i.e. the Wildlife and Countryside Act 1981, as amended, the Conservation (Habitats &c) Regulations 1994.

- 10.1.6 In addition, the species known to occur on the site as a result of the desk study and Phase 1 habitat survey are compared with those listed in animal welfare legislation, i.e. the Badgers Act 1992 and the Wild Mammals (Protection) Act 1996.

Species of Principal Importance

- 10.1.7 The species known to occur on the site are compared with those listed as Species of Principal Importance for the Conservation of Biodiversity by the Secretary of State or requiring action in the Local Biodiversity Action Plan.

Other Species of Conservation Concern

- 10.1.8 The species known to occur on the site are compared with other nature conservation listings, such as red data books.

Invasive Plant Species

- 10.1.9 The species of plant present on the site are compared with those listed by government agencies as invasive non-natives, with particular attention given to those listed in the Wildlife and Countryside Act.

Review of Legislation and Policy

- 10.1.10 If any of the above are found to occur on or near the site and are likely to be affected by the development in any way, the relevant legislation and planning policy (including national, regional, county and borough policies) are examined to determine whether the proposed development is compliant.

Ecological Enhancement

- 10.1.11 Planning policy generally requires new developments to be enhanced for biodiversity. The existing proposals are considered to determine whether biodiversity enhancements are offered and whether they are adequate to meet the policy requirements. Again, national, regional, county and borough policies are considered.

10.2 Identification of Potential Further Ecological Issues

- 10.2.1 Further ecological issues are those which can not be resolved during the desk study and extended Phase 1 habitat survey for any reason, including the following:
- ✧ The development is near a designated site and consultation with the relevant regulator is required in order to determine whether further assessment is required;
 - ✧ Suitable habitat is present on or near the site for a protected species / species of conservation concern and specialist survey techniques are required for their detection;
 - ✧ Suitable habitat is present on or near the site for a protected species / species of conservation concern and the extended Phase 1 habitat survey was not undertaken at a suitable time of year for their detection;
 - ✧ A protected species / species of conservation concern was found on or near the site but further information on population size or distribution is required in order to resolve any legal and planning policy issues (such as obtaining licences).
- 10.2.2 Discussion of issues raised by 3rd parties, e.g. reports of protected species from the site by local people, may also be discussed under this heading.
- 10.2.3 The desk study is used as a guide to the protected species / species of conservation in the local area, however, the list is not taken to be exhaustive and it is borne in mind that some species may no longer occur in the locality.

- 10.2.4 No attempt is made to evaluate the importance of the site for species not yet confirmed to be on or near the site, nor to discuss the implications for the development if the species were to be found on the site.

11. Appendix 2: Species Lists

Site 1

Poor semi-improved grassland (SI1)

Common name	Scientific name	DAFOR
Cock's foot	<i>Dactylis glomerata</i>	A
Perennial rye-grass	<i>Lolium perenne</i>	F
Common couch	<i>Elytrigia repens</i>	F
Wall barley	<i>Hordeum murinum</i>	F
Dandelion	<i>Taraxacum officinale</i> agg.	F
Ribwort plantain	<i>Plantago lanceolata</i>	F
Common chickweed	<i>Stellaria media</i>	F
Common field-speedwell	<i>Veronica persica</i>	F
Smooth sow thistle	<i>Sonchus oleraceus</i>	O
Creeping buttercup	<i>Ranunculus repens</i>	O
Spotted medick	<i>Medicago arabica</i>	O
Annual meadow grass	<i>Poa annua</i>	O/E
Dove's-foot cranes-bill	<i>Geranium molle</i>	R
Red fescue	<i>Festuca rubra</i>	R
Bristly oxtongue	<i>Helminthotheca echioides</i>	R
Common nettle	<i>Urtica dioica</i>	R
Lesser swine cress	<i>Coronopus didymus</i>	R/E

Amenity grassland (AM1)

Common name	Scientific name	DAFOR
Perennial rye-grass	<i>Lolium perenne</i>	D
Daisy	<i>Bellis perennis</i>	F
Dandelion	<i>Taraxacum officinale</i> agg.	F
Ribwort plantain	<i>Plantago lanceolata</i>	F
Bare ground	-	O
Common mouse-ear	<i>Cerastium fontanum</i>	R

Hard standing / Ephemeral / short perennial mosaic (HS/ESP1)

Common name	Scientific name	DAFOR
Annual meadow grass	<i>Poa annua</i>	O
Bryophyte	-	O
Dandelion	<i>Taraxacum officinale</i> agg.	O/E
Perennial rye-grass	<i>Lolium perenne</i>	O/E
Ribwort plantain	<i>Plantago lanceolata</i>	R/E
Common field-speedwell	<i>Veronica persica</i>	R/E
Hairy bitter-cress	<i>Cardamine hirsuta</i>	R/E

Site 3

Scattered broadleaved trees (SBW)

Common name	Scientific name	DAFOR
Whitebeam	<i>Sorbus aria</i>	D

Poor semi-improved grassland (SI2)

Common name	Scientific name	DAFOR
Common couch	<i>Elytrigia repens</i>	A
Common chickweed	<i>Stellaria media</i>	A
Dandelion	<i>Taraxacum officinale</i> agg.	A
Cock's foot	<i>Dactylis glomerata</i>	F
Spotted medick	<i>Medicago arabica</i>	F
Creeping buttercup	<i>Ranunculus repens</i>	O
Dove-foot crane's-bill	<i>Geranium molle</i>	O
Smooth sow thistle	<i>Sonchus oleraceus</i>	O
Common mallow	<i>Malva sylvestris</i>	O
Annual meadow grass	<i>Poa annua</i>	O
Common field-speedwell	<i>Veronica persica</i>	O
Creeping bent	<i>Agrostis stolonifera</i>	O
Wall barley	<i>Hordeum murinum</i>	O
Bare ground	-	O
Foxglove	<i>Digitalis purpurea</i>	R
Perennial rye-grass	<i>Lolium perenne</i>	R
Red dead nettle	<i>Lamium purpureum</i>	R
Cleavers	<i>Galium aparine</i>	R
Bramble	<i>Rubus fruticosus</i> agg.	R
Ragwort	<i>Senecio jacobaea</i>	R
Groundsel	<i>Senecio vulgaris</i>	R
Shepherd's purse	<i>Capsella bursa-pastoris</i>	R

Amenity grassland (AM2)

Common name	Scientific name	DAFOR
Perennial rye-grass	<i>Lolium perenne</i>	D
Dandelion	<i>Taraxacum officinale</i> agg.	F
Spotted medick	<i>Medicago arabica</i>	F/E
Common bent	<i>Agrostis capillaris</i>	O
Bare ground	-	O
Common mouse-ear	<i>Cerastium fontanum</i>	R
Cock's foot	<i>Dactylis glomerata</i>	R
Shepherd's purse	<i>Capsella bursa-pastoris</i>	R
Daisy	<i>Bellis perennis</i>	R
Broad leaved dock	<i>Rumex obtusifolia</i>	R
Common mallow	<i>Malva sylvestris</i>	R
Common field-speedwell	<i>Veronica persica</i>	R

Intact species-poor hedge (PH1)

Common name	Scientific name	DAFOR
Leyland cypress	<i>X Cuprocyparis leylandii</i>	D

Hard standing / Ephemeral / short perennial (HS/ESP2)

Common name	Scientific name	DAFOR
Common chickweed	<i>Stellaria media</i>	F/E
Yorkshire fog	<i>Holcus lanatus</i>	O/E
Dandelion	<i>Taraxacum officinale</i> agg.	O/E
Annual meadow grass	<i>Poa annua</i>	R/E
Cleavers	<i>Galium aparine</i>	R/E

Common name	Scientific name	DAFOR
Red dead nettle	<i>Lamium purpureum</i>	R/E
Cock's foot	<i>Dactylis glomerata</i>	R/E
Groundsel	<i>Senecio vulgaris</i>	R/E
Common mouse-ear	<i>Cerastium fontanum</i>	R/E

Site 4

Scattered broadleaved trees (SBW)

Common name	Scientific name	DAFOR
Wild cherry	<i>Prunus avium</i>	D

Poor semi-improved grassland (SI3)

Common name	Scientific name	DAFOR
Cock's foot	<i>Dactylis glomerata</i>	A
Common couch	<i>Elytrigia repens</i>	A
Common field-speedwell	<i>Veronica persica</i>	F
Dandelion	<i>Taraxacum officinale</i> agg.	F
Perennial rye-grass	<i>Lolium perenne</i>	F
Ribwort plantain	<i>Plantago lanceolata</i>	F
Wall barley	<i>Hordeum murinum</i>	O
Creeping bent	<i>Agrostis stolonifera</i>	O
Musk stork's-bill	<i>Erodium moschatum</i>	O
Smooth sow thistle	<i>Sonchus oleraceus</i>	O
Common chickweed	<i>Stellaria media</i>	O
Red dead nettle	<i>Lamium purpureum</i>	O
Dove's-foot crane's-bill	<i>Geranium molle</i>	O

Common name	Scientific name	DAFOR
Bare ground	-	O
White clover	<i>Trifolium repens</i>	R
Lesser celandine	<i>Ficaria verna</i>	R
Daisy	<i>Bellis perennis</i>	R
Spotted medick	<i>Medicago arabica</i>	R

Amenity grassland (AM3)

Common name	Scientific name	DAFOR
Perennial rye-grass	<i>Lolium perenne</i>	D
Yorkshire fog	<i>Holcus lanatus</i>	F
White clover	<i>Trifolium repens</i>	O
Daisy	<i>Bellis perennis</i>	O
Dandelion	<i>Taraxacum officinale</i> agg.	O
Bare ground	-	O
Ribwort plantain	<i>Plantago lanceolata</i>	R

Introduced shrub (IS1)

Common name	Scientific name	DAFOR
Wilson's honeysuckle	<i>Lonicera nitida</i>	D

Hard standing / Ephemeral / short perennial (HS/ESP3)

Common name	Scientific name	DAFOR
Annual meadow grass	<i>Poa annua</i>	O
Perennial rye-grass	<i>Lolium perenne</i>	O
Bryophyte	-	O
Cleavers	<i>Galium aparine</i>	O/E

Common name	Scientific name	DAFOR
Common field-speedwell	<i>Veronica persica</i>	O/E
Common chickweed	<i>Stellaria media</i>	O/E
Yorkshire fog	<i>Holcus lanatus</i>	R/E
Groundsel	<i>Senecio vulgaris</i>	R/E

Site 5

Dense scrub (DS1)

Common name	Scientific name	DAFOR
<i>Shrub layer</i>		
Bramble	<i>Rubus fruticosus</i>	D
<i>Ground flora</i>		
Cock's foot	<i>Dactylis glomerata</i>	O/E
Common couch	<i>Elytrigia repens</i>	O/E
Bare ground	-	R

Scattered scrub (SS)

Common name	Scientific name	DAFOR
Common hawthorn	<i>Crataegus monogyna</i>	A
Dog rose	<i>Rosa canina</i> agg.	F

Scattered broadleaved trees (SBW)

Common name	Scientific name	DAFOR
Wild cherry	<i>Prunus avium</i>	D

Poor semi-improved grassland (SI4)

Common name	Scientific name	DAFOR
Cock's foot	<i>Dactylis glomerata</i>	A
Common couch	<i>Elytrigia repens</i>	A
Common field-speedwell	<i>Veronica persica</i>	F
Dandelion	<i>Taraxacum officinale</i> agg.	F
Perennial rye-grass	<i>Lolium perenne</i>	F
Red dead nettle	<i>Lamium purpureum</i>	F
Spotted medick	<i>Medicago arabica</i>	F
Ribwort plantain	<i>Plantago lanceolata</i>	O
Wall barley	<i>Hordeum murinum</i>	O
Creeping bent	<i>Agrostis stolonifera</i>	O
Yarrow	<i>Achillea millefolium</i>	O
Creeping buttercup	<i>Ranunculus repens</i>	O
Yorkshire fog	<i>Holcus lanatus</i>	O
Broad leaved dock	<i>Rumex obtusifolia</i>	O
Smooth sow thistle	<i>Sonchus oleraceus</i>	O
Cleavers	<i>Galium aparine</i>	O
Lesser celandine	<i>Ficaria verna</i>	R
Groundsel	<i>Senecio vulgaris</i>	R
Spear thistle	<i>Cirsium vulgaris</i>	R
Dove's-foot crane's-bill	<i>Geranium molle</i>	R
Foxglove	<i>Digitalis purpurea</i>	R
Common mallow	<i>Malvus sylvestris</i>	R
Bare ground	-	R
Common nettle	<i>Urtica dioica</i>	R/C

Target note (TN3)

Common name	Scientific name	DAFOR
Ivy	<i>Hedera helix</i>	D
Sweet spurge	<i>Euphorbia dulcis</i>	F
Dove's-foot crane's-bill	<i>Geranium molle</i>	O
Bramble	<i>Rubus fruticosus</i>	O
Smooth sow thistle	<i>Sonchus oleraceus</i>	R
Common field speedwell	<i>Veronica persica</i>	R
Lesser celandine	<i>Ficaria verna</i>	R

Amenity grassland (AM4)

Common name	Scientific name	DAFOR
Perennial rye-grass	<i>Lolium perenne</i>	D
Bare ground	-	F
Spotted medick	<i>Medicago arabica</i>	R
White clover	<i>Trifolium repens</i>	R

Hard standing / Ephemeral / short perennial (HS/ESP4)

Common name	Scientific name	DAFOR
Annual meadow grass	<i>Poa annua</i>	O
Bryophyte	-	O
Yorkshire fog	<i>Holcus lanatus</i>	O/E
Wall barley	<i>Hordeum murinum</i>	O/E
Cleavers	<i>Galium aparine</i>	R/E
Common chickweed	<i>Stellaria media</i>	R/E
Cock's foot	<i>Dactylis glomerata</i>	R/E

Common name	Scientific name	DAFOR
Smooth sow thistle	<i>Sonchus oleraceus</i>	R/E
Creeping thistle	<i>Cirsium arvense</i>	R/E
Sweet spurge	<i>Euphorbia dulcis</i>	R/E
Dandelion	<i>Taraxacum officinale</i> agg.	R/E

Site 6

Scattered broadleaved trees (SBW)

Common name	Scientific name	DAFOR
Sycamore	<i>Acer pseudoplatanus</i>	A
Weeping willow	<i>Salix x sepulcralis</i>	A

Improved grassland (I1)

Common name	Scientific name	DAFOR
Perennial rye-grass	<i>Lolium perenne</i>	D
White clover	<i>Trifolium repens</i>	F
Cock's foot	<i>Dactylis glomerata</i>	F
Annual meadow grass	<i>Poa annua</i>	O
Creeping bent	<i>Agrostis stolonifera</i>	O
Bare ground	-	O
Spotted medick	<i>Medicago arabica</i>	R
Wall barley	<i>Hordeum murinum</i>	R

Amenity grassland (AM5)

Common name	Scientific name	DAFOR
Perennial rye-grass	<i>Lolium perenne</i>	D
Spotted medick	<i>Medicago arabica</i>	F

Common name	Scientific name	DAFOR
Daisy	<i>Bellis perennis</i>	F
Bare ground	-	F
Wall barley	<i>Hordeum murinum</i>	O
Ragwort	<i>Senecio jacobaea</i>	R
Dandelion	<i>Taraxacum officinale</i> agg.	R
Yarrow	<i>Achillea millefolium</i>	R
Shepherd's purse	<i>Capsella bursa-pastoris</i>	R
Bristly ox-tongue	<i>Helminthotheca echioides</i>	R
Common mouse-ear	<i>Cerastium fontanum</i>	R
Musk stork's-bill	<i>Erodium moschatum</i>	R/C
Common chickweed	<i>Stellaria media</i>	R/C

Intact species-poor hedge (PH2)

Common name	Scientific name	DAFOR
Leyland cypress	<i>X Cuprocyparis leylandii</i>	D

Intact species-poor hedge (PH3)

Common name	Scientific name	DAFOR
Garden privet	<i>Ligustrum ovalifolium</i>	D

Hard standing / Ephemeral / short perennial (HS/ESP5)

Common name	Scientific name	DAFOR
Perennial rye-grass	<i>Lolium perenne</i>	O/E
Smooth sow thistle	<i>Sonchus oleraceus</i>	O/E
Wall barley	<i>Hordeum murinum</i>	O/E
Cock's foot	<i>Dactylis glomerata</i>	O/E

Common name	Scientific name	DAFOR
Cleavers	<i>Galium aparine</i>	R/E
Red dead nettle	<i>Lamium purpureum</i>	R/E
Bristly ox-tongue	<i>Helminthotheca echioides</i>	R/E
Shepherd's purse	<i>Capsella bursa-pastoris</i>	R/E
Dandelion	<i>Taraxacum officinale</i> agg.	R/E